

The Automatic Typewriter in the Law Office

*Bernard Sternin **

Automatic typing equipment can be a boon to law office work in the form of speed, accuracy, and dependability.

Many readers may never have seen an automatic typewriter and many others probably have not thought about it as a law office tool. Consequently, we will begin by describing an automatic typewriter and how it works. The five applications which follow will lend a better understanding of the potential of this equipment in the law office.

Some lawyers may have seen automatic typing equipment and not recognized it as such. It is often pictured as part of a computer or telegraph setup. Perhaps you have seen one in an advertisement for a data transmitting telephone. You may have come across media commonly employed to make automatic typewriters work: punched paper tape or punched cards.

An automatic typewriter (Illustration 1) is primarily an electric typewriter to which certain controls have been added. Its special features could be disregarded and it might then be used routinely by anyone who can use any typewriter.

In order to automate typing, two devices have been added. The first is a punch. This part of the machine is able to make a record of whatever is being typed by punching combinations of holes into paper tape or into cards. The second is a reader. The reader part of the machine is able to sense the holes in a previously punched tape or card and cause the typewriter to reproduce automatically, and at high speed, the material represented by the holes.

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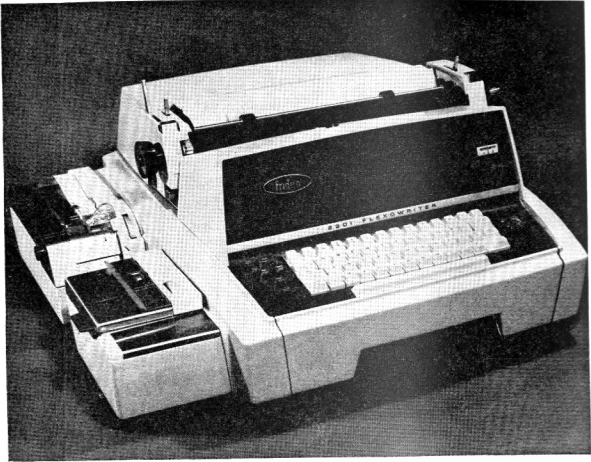


Illustration 1

Front view of a typical automatic machine. The keyboard is substantially the same as a standard typewriter. This is a Friden 2301 Flexowriter.

Illustration 2 shows a typical automatic machine. Notice how similar the typewriter part of it is to a standard one. At the left rear is the punch with a piece of tape in it. The forward end of the tape has already been punched. The part to the rear is blank paper which will be drawn forward to be punched as needed. In front of the punch is the reader containing a punched card. In the illustration, only one card is shown in the reader. However, the cards are furnished in chain form, and accordion folded, so that you may punch and retain as many as are needed.

The three parts of the machine are independent of one another. It is not necessary for all three to work simultaneously. In the applications which are described in this article, there are times when only the typewriter and punch are being used. There are other points at which only the reader and typewriter are operative. For still another application all three parts may work to-

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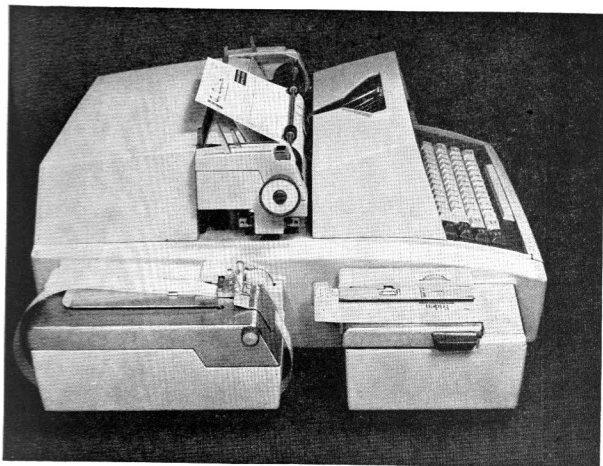


Illustration 2

An automatic typewriter with punch attachment at the left rear and reader at the left front of the machine. The punch will punch the blank tape drawn into it from the rear. The reader will read from a previously punched card. Both the punch and reader can accommodate tape or cards.

gether. If the need is to duplicate a previously punched tape, the reader and punch could be used without the typewriter.

Punching Tape and Cards

There is very little difference between punched tape and punched cards. In fact, the cards may be viewed as wide tape with only their edges punched. Which will be used is a matter of convenience in storage and handling and of cost. Tape is made of paper, usually about one inch wide (see Illustration 3). It comes in rolls similar to adding machine tapes, but longer. About 100,000 characters can be punched into a roll of tape. If lengthy material is to be punched, tape is generally used. When the document is finished, the punched tape is torn off the roll, leaving the

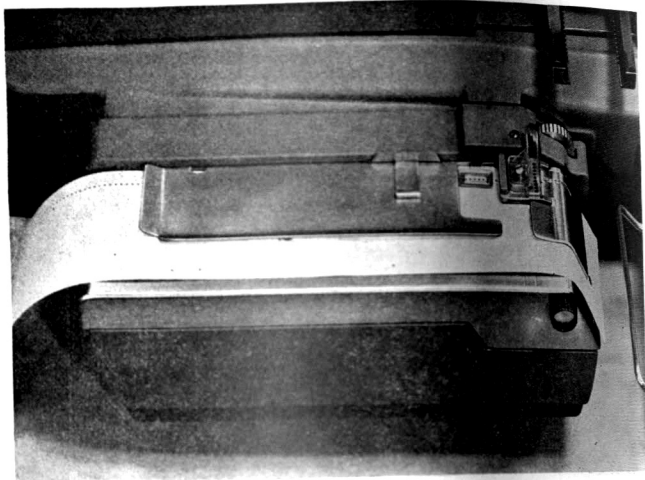


Illustration 3

A close-up of the punch, set to punch into cards.

balance of the roll ready for the next application. A roll of tape costs about a dollar, so the price factor here is negligible. If desired, prefolded tape can be obtained.

A standard punched card, made of index stock, measures about three by seven inches. One such card is capable of storing just about one line of typing. The cards are furnished in attached form, accordion or fan-folded, so that as many as are needed may be left attached and stored as a unit. Cards cost a little over one cent each, and consequently they are considerably more expensive to use than tape. However, cards handle far easier than tape. They can be labeled with their content (Illustration 4). They can be easily sorted and filed. For short pieces of data, such as names and addresses or short paragraphs, they are much better than small pieces of tape.

The punch part of the machine punches holes into tape or cards in substantially the same way. If the operator wants to

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Illustration 4

Affixing of a gummed label to a punched card. The label was typed simultaneously with the punching of the cards.

punch into tape, she inserts the end of the roll of blank tape into the punch; if cards are wanted, the tape must be removed and blank cards inserted.

It is possible to use the typewriter with the punch off, if no punching is desired. Once the punch is on, everything typed on the keyboard is recorded as a series of holes in the paper tape or cards. When the operator touches the carriage return, not only does the carriage move to the beginning of the next line, but a code is also punched which represents that function. If the typist presses the tabulate key, the typewriter tabulates over to the next prefixed tabular stop and a code is punched representing that function.

The operator is really doing two jobs at once. Firstly, she is typing words onto paper in the carriage of the typewriter, in the ordinary way. Secondly, she is recording what is being typed,

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including the carriage returns, tabular and spacing structure, into tape or cards. If she makes an error, she must correct it in the tape or cards as well as on the document being typed.

Error Correction

Error correction in punched tape or cards is not difficult. If the error is detected as soon as it is punched, the operator manually turns the punched tape or card backwards in the punch until the code which represents the erroneous letter is under the punch. The wrong code is then overpunched with a delete code. The delete will simply be passed over as if did not exist whenever the tape or card is used. With single-tape equipment, the operator must delete all punched material which follows the correction, in order to reach unpunched tape. At that point, she will put in the correct code, and will then retype all the language which followed the error.

Most errors are detected almost as soon as they are made, and error correction of material being punched is usually simple. Should an error be detected much beyond the point at which it was punched, it will be sufficient simply to make a note of it for correction when the tape is used at a later time.

How does the operator correctly identify the code which represents the error? She either may use a code chart, which shows the code for each letter, number, and function, or she can easily identify the space code which separates words, and work forward from that.

Reading Tapes and Cards

In the reading operation, we assume that we have a previously punched tape or cards which we want to use to cause the typewriter to type automatically. We need not turn on the punch part of the machine for this application, and consequently only the reader and typewriter parts of the equipment will be operative.

Both cards and tapes function in the reader in the same way. The combinations of previously punched holes are sensed by the reader and the typewriter is caused to repeat the letters, numbers, and functions they represent. Thus the material originally typed at the time of punching is now retyped (Illustration 5).

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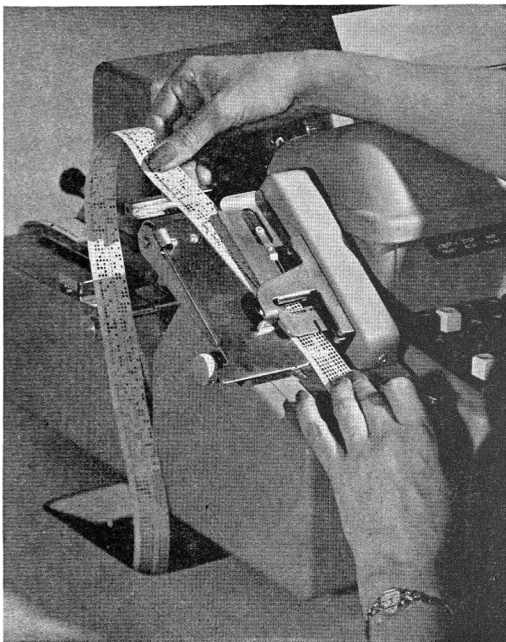


Illustration 5

Punched tape being inserted into the reader.

Performance of an Automatic Typewriter

Automatic typewriters presently read and type at the rate of between 100 to 180 words a minute, depending on the model. Names, addresses, file numbers, and titles are typed at the same speed as ordinary English. And, assuming that there are no errors in the tape, the typing will be error-free. The operator's hands are freed to do the supplementary work which accompanies

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typing, such as getting files, collating and stapling papers, handling carbons, and so forth.

Operating the Reader

The operator may pulse the tape through the reader slowly, one letter at a time. She may stop it at any point; she may turn the reader manually to bypass unwanted material. These features enable her to bypass any errors which she knows are in the punched tape or cards, and to make the correct entry from the keyboard. Similarly, she may modify the work being typed by bypassing entire words or lines.

Modifying the way a punched card or tape will function is not difficult. The operator can see the code which represents the space between words and the code which represents the carriage return or end of the line. After stopping the reader, she may then manually turn it code by code, bypassing a word or an entire line. She may elect to use a code chart to identify the very letter which the reader will next cause to be typed.

Updating Tapes

In the operation just described, only the reader and typewriter were in use. There is a third possibility: a previously punched tape or card might be used to type material and simultaneously create a new tape or cards. This approach is usually used when the tape being read is going to be modified by having additions or deletions made. Any material in a previously punched tape may be bypassed, as described previously. Such material will neither be typed onto the document nor repunched. New material added from the keyboard will be typed and, if desired, also punched into the new tape or cards in the punch. The end result is a new document which has been produced in the most part automatically by the use of previously punched tape or cards, and also a new tape or cards made of the modified, complete material.

Unique Features

From what has been described, it should be clear that the automatic typewriter is not far removed from its manual counterpart. All functions are performed on both in similar ways. There are

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several features which exist in automatic machines that have no equivalent in the manual. Some of these must be mentioned here as a basis for understanding the material which follows.

1. *Stop Feature.* There is a code which, when read in the reader, causes the reader and consequently the automatic typing action to stop automatically at that point. This code is punched into the tapes or cards at the time of their creation, and is called a stop code. Stop codes are used whenever it is necessary to have the reader, and consequently the typewriter, come to a stop for the insertion of manual material from the keyboard. Legal applications require frequent use of this code to allow for the additions of names, dates, descriptive material, etc.

2. *Alternative Language.* It is also possible to have planned a tape or card with alternative language, such as *executo-, administrator-administratrix*. In such an application, stop coding will be required to bring the equipment to a halt so that the choice may be made. The unwanted words will be skipped, and neither typed nor punched.

3. *Automatic "Skip" Operation.* Most machines are capable of performing a skip operation automatically, once the choice of alternatives is made by the operator. Other coding is contained in the tape to cause the reader to revert to normal typing at the correct point.

With this basic picture of the automatic typewriter in mind, it should be possible to visualize the five applications to law office work which follow.

DRAFTING

In this application, we include any materials which need to be typed in draft, modified, and retyped one or more times.

Many legal documents evolve through a series of drafts and redrafts. Negotiated agreements are often subject to many reruns. Even papers not the result of bargaining are often modified and retyped after being read by the attorney who drew them, an associate, or the client. The correspondence dictated by some attorneys is routinely subject to retyping for reasons best known to their secretaries.

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Preparation of a Draft Tape

The techniques involved in using an automatic typewriter to facilitate drafting involve the operator of the machine only, not the attorney. The attorney dictates or transmits his work in whatever way he customarily does. His secretary or stenographer then types it, using the automatic typewriter. However, before she begins, she turns the punch on. Now, in addition to the usual copies, the material is punched into tape exactly as typed. Punched tape is selected rather than cards because the cost of tape is negligible and the material typed may be lengthy.

If the operator makes a typing error, she corrects it both on the typed paper and also in the tape by overpunching the incorrect letter or words with delete codes and retyping and repunching correctly immediately following. Should she fail to see the error until a later point, she can make the correction when the tape is rerun, as will be described shortly.

Storage of the Tape

As an end result, the operator will have the material not only typed onto paper but also punched into tape. This punched tape, made as a by-product of the initial typing, is now torn off the input roll and is stored by the operator, together with a carbon copy of the document which will serve to identify what is in the tape (Illustration 6). Inexpensive cardboard holders can be devised, folded to provide a channel at one side in which to store the tape and a flap on the other under which to clip the copy.

Up to the present point, only the typewriter and punching parts of the automatic typewriter have been involved. The reader function has not as yet been used in this application.

Changes and Modifications

The typewritten copy of the drafted material is next remitted to the attorney who dictated it or to the parties involved. Whatever corrections, changes, or modifications are wanted are then indicated in the customary way. Here again, no changes are required in the working habits of the lawyers involved.

The operator is now ready to rerun the material as modified. The previously punched tape is placed into the reader of the automatic typewriter, and sufficient sheets of paper placed into

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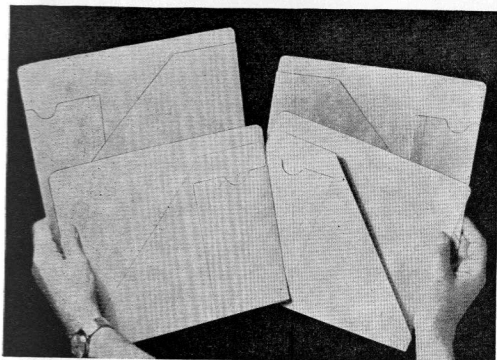


Illustration 6

Filing jackets for storage of punched cards or tape.

the carriage to make the necessary number of copies. Again, the punch is turned on to produce an undated tape. This newer tape will be a recording of the revised document that is produced.

The operator starts the reader. Now, all three parts of the equipment are operative. The reader is sensing the previously punched tape and is causing the typewriter to type the material recorded in it. Simultaneously, the punch is repunching whatever is being typed.

The operator visually follows the material being typed, allowing the reader to function automatically until a point is approached at which a modification must be made. The reader is capable of being slowed down, and made to function one letter or one word at a time. Consequently, the operator can take the reader right up to the point at which a change is required and then stop it. When the reader is stopped, nothing further is typed by it and consequently the punching also stops.

Assume the operator must now add some language. She does so by typing it on the keyboard of the typewriter. The new material is thus added to the papers being typed and is simultaneously punched into the new tape.

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Now the operator may have to bypass some unwanted language in the old tape which is in the reader. She does so by manually turning the reader past the unwanted material.

After manually turning by the unwanted material, the operator reaches the point in the reader tape at which she may restart the reader on its automatic function. Of course, the bypassed material is neither typed nor repunched.

In addition to changes made by the attorneys or parties, the operator may correct any typing error not previously corrected by using the techniques described above.

When the document is complete, the operator has a new tape and discards the initial tape. This new tape and a copy of the new document are now placed in the storage holder. Of course, the entire process may be repeated as many times as the document is redrafted.

The foregoing approach is well suited for a paper likely to have a few changes made here and there. However, materials which are apt to go through extensive redrafting are better handled on a paragraph-by-paragraph basis. In that way, the operator eliminates the need to retype the entire page each time a change is made.

In using the paragraph approach, the operator initially types the proposed document in the conventional way, making sufficient carbon copies. As the material is typed, it is simultaneously punched, just as was done in the first approach. However, in this instance, the operator will pause at the end of each paragraph to tear off the tape of the paragraph just punched. The tapes of the various paragraphs will have to be identified, either by writing the number of the paragraph onto the tape, or by storing them in envelopes which are numbered. The operator may use a loose-leaf book whose pages are folded jackets, each prenumbered and tab indexed, as a permanent aid in doing draft typing. Prefolded tape is available, which the operator may prefer to use instead of tape from a roll.

As the attorneys or parties redraft each paragraph, the operator reruns the tape, making the modifications required and repunching a new tape. The initial redraft may be so extensive that the operator may decide to retype and repunch the entire paragraph manually, not using the previously punched tape of it. Subsequent redrafts of the paragraph are apt to be much less

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extensive, and the operator may choose to work from the previously punched tape. Her work will be speeded up and the redraft returned to the parties at a much faster rate than previously possible. Some paragraphs will require no modification and will therefore be usable as initially punched.

Approved Draft

When the last paragraph has been formulated by the attorneys or parties, the operator will have a tape of each paragraph, error-free, ready to run in final form. The completed document can be produced automatically. Proofreading time can be reduced to a minimum. Names, addresses, dates, and complex descriptions, if correct in the final draft paragraphs, are necessarily correct in the final instrument.

AUTOMATING TYPING OF CASE DATA

Each matter pending in a law office has attendant to it several items which will be typed repeatedly. The name and address of the client is one such. The name and address of one's adversary is another. In litigation, the caption of the case is typed time and again. If a particular agency of government is involved, its name, address, and reference will be reused. Letters, envelopes, forms, litigation covers each require the use of one or more of these items. Property descriptions may be typed two to six times in the course of a real estate transaction.

Any typist will confirm the fact that material in the nature of names, addresses, and file numbers must be typed at a far slower rate than straight English. Furthermore, errors are more apt to occur when the former materials are manually typed and also are more likely to be of greater significance.

Storage of Repetitive Data

The application which will be described here involves prepunching these repetitive items of case data as soon as the file is opened, or as soon as available, storing them and using them as needed throughout the life of the case.

The operator might choose to punch names and addresses into cards, since cards are easier to handle and file. Blank cards are placed into the punch, and gummed labeling into the typewriter.

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The operator then proceeds to type the name and address onto the label, and, of course, the material is simultaneously punched into the card. The label is then affixed to the card to identify its contents. From this point on, the card may be used in the reader to cause the machine to type the name and address as often as required.

A given card can be used in several ways. If a card contains the name of the client, his address, and the letter salutation (Dear Mr. Smith), the operator could use the card in its entirety when typing a letter, and later, in part, to type the envelope. On another occasion, the name alone or the address alone might be extracted for use on a form.

Alternate readouts may be obtained visually by the operator identifying where the lines begin. However, if planned for at the time the card was punched, it might have been designed to stop automatically at certain points, and/or to begin typing automatically at some internal point as part of a "skip" operation.

Format Design of Data Cards

To obtain an optimum use of this application requires some thought and planning. Because the data cards are likely to be used on many office forms, the maximum width of each line and the maximum number of lines to be used should be considered with forms in mind, so that the data will fit into the blank spaces in the forms. Ideally, the office should develop its own printed forms in order to control their design. Of course, thought will have to be given to the question of just which data should be punched. Also, a procedure should be established to assure punching routinely at a given point in setting up a file. Modifications of data or new data received during the pendency of the file must be routed for punching. As soon as a particular piece of data is punched it is a good practice to have the operator run it onto labeling material, which is then affixed either to a docket page or to the face of the file. By so doing, other members of the office are able to know at all times just what data is currently being held in storage. These transmitted labels serve both as a source of information and as a cross-check on accuracy.

Storage of Punched Data Cards

A good system for storage of the punched data cards is important in assuring a successful approach. Clearly, if the cards

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are thrown loosely into the file to which they relate, more time will be lost looking for them than is saved by their use. A potentially excellent application may fail entirely because of inability to cope with the storage factor.

Many manufacturers are offering various types of inexpensive holders for data processing, several of which are well suited for law office use. Gummed pockets are available which can be glued onto the face of a file, into which the punched cards are placed. Another method is simply to file the cards in drawers with an index card separating each case. A desk drawer can be subdivided to do the same job. A third approach uses looseleaf binders holding specially designed cardboard pages. Each page contains overlapping pockets behind which the punched cards are slipped, leaving the top inch of the card visible. A given page holds all the data cards of a particular case. The operator sees them all at a glance and selects the one she needs without having to handle the others.

If, in punching some data, it appears better to use tape instead of cards because of the length of the item, it is important to store those tapes in holders which are the same overall size as punched cards. By so doing, cards and tapes will both be accommodated in whatever storage system is chosen.

FORM SUPPLEMENTATION

The application described next consists of using prepunched material to fill in the blanks on a printed form.

Printed forms are tremendous timesavers, and consequently their use continues to grow. Automatic typing equipment offers a fine method of supplementing many of them. The blank areas in many forms require manual entry of material which is repetitive and could have been prepunched and automatically typed. At one point the name of a staff member may be required. At another, today's date. At most points, however, a phrase, sentence, or paragraph will need to be typed. Many of these are recurrent, and with a minimum of planning can be designed, punched, stored with the form blanks, and used as needed.

The prepunched phrases, sentences, and paragraphs may contain coding to cause them to stop for manual addition from the keyboard, or to permit the operator to skip alternative wording.

Many printed forms can also utilize the prepunched case data described in the preceding application, such as a caption to head them and the name and address of an addressee at their close. Some forms, when supplemented by their own punched variables and by case data, may be completed in their entirety without any manual typing.

One example of the approach is a routine notice of motion form. An office might print such a form leaving the court in which it is returnable and the relief sought as blanks. Both classes of these variables could be punched into cards and used as needed. The name of the staff attorney upon whose affidavit the motion is being made, and today's date could also be supplied by punched cards. The caption at the head, the name and address of one's adversary, the blue back, and the envelope in which the papers are mailed, can be produced automatically. In fact, about the only item requiring manual entry is the date on which the motion is returnable.

Another example of this type of application is illustrated by the schedule of disbursements, required at the close of some matters. Many items of disbursements are repetitive, in whole or part. They may vary as to amount, but the names and addresses of the payees tend to remain constant, since an office tends to reuse the same investigator, reporting service, photographer, etc. The approach here is to use a printed form which consists merely of a heading and columns. Punched cards are then designed with a tabular structure which will enable them to type their content onto the form and into the appropriate column. Stop-coding is used where needed to allow a manual entry of the amount of the expenditure.

FORMS ON TAPE

This application describes the use of punched tape in lieu of a printed form.

Almost every office reuses certain materials, affidavits, or letters, which it does not print for several reasons. It may not be economical to print a form which is used a limited number of times. The office might have to print so many different kinds of forms as to make storage a problem. Certain forms might become outdated too quickly. There are certain materials which

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good taste does not permit to be printed. In some situations a form might consist of several alternative paragraphs at several different points, making for too many possible combinations to allow for printing.

In many instances, the use of punched tape to produce a form will solve these problems. Although obviously not as fast as using a preprinted page, clearly the approach is much faster than an entirely manual one.

Many offices maintain collections of legal "forms" or letter "forms" consisting of samples of materials which are reused often enough to justify collecting and indexing them, but not sufficiently frequent to warrant their being printed and stored. Each of these can be punched into a tape and stored in a holder on whose face appears a copy of exactly what the tape will type. When used, these tapes will produce a typed original and carbon copies. The tapes are stop-coded to permit manual entry from the keyboard at appropriate points. Because a typed original is produced, there will never be any question of taste or propriety which is sometimes raised from a printed form with its blanks filled in.

If the form consists of alternate paragraphs at certain points, a punched tape or card approach is more practical than printing so many alternatives. Furthermore, within a given paragraph, alternative wording may be programmed, such as *administrator-administratrix*, *executor-executrix*, to permit the operator to select one word and skip the others.

Forms on tape may be supplemented by punched data relative to the case, described in the second application above. The caption may be first read in, followed by the tape form, and completed by a date card and the name and address of one's adversary.

Although the standard automatic typewriter comes equipped with only one reader, it is possible to purchase and connect a second reader to it. For certain applications, it may be desirable to use two input sources. In that way, if a form on tape is coded to come to a stop at some internal point for an entry of one of several paragraphs, it will not be necessary to remove the main tape from the reader in order to run in the appropriate material. Instead, the second reader can be used to produce the paragraph selected, leaving the main tape undisturbed in the typewriter's

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reader. Coding is available which will cause one reader to halt itself and automatically start the other, and vice versa. Consequently, in some applications, the operator needs merely to place the appropriate tapes in the two readers and start the first. She is then free to attend to other work while the machines complete the entire document. Such an approach is possible, of course, only if no manual entries are to be made.

The forms on tape application described above can be well applied to letter writing. Many letters are reused often enough to warrant the approach. Everyday letter writing probably occupies a good deal of the daily time of many practitioners. Yet, comparatively little effort is expended by most of us to reduce this constantly repetitive drain. Once a good system of indexing and storage is established, many hours a week can be saved in dictation and proofreading time by applying the techniques here described to letter writing needs. All that was said regarding legal forms on tape applies equally well to letter writing. Each letter can be on a tape of its own, or a multiple paragraph approach can be used. The tapes or cards can be supplemented by case data to type the inside address and salutation and to address the envelope. Manual supplementation from the keyboard can be used as necessary. Good taste is never violated as it might be by use of a printed form. A far greater number of letter forms can be developed and stored than would ever be possible were they to be printed.

PROGRAMMING A PARTICULAR AREA OF WORK

In some law offices, certain areas of work are repetitive enough to warrant prepunching specific language components, usually paragraphs but possibly phrases, so planned and so structured as will enable them to be combined in the automatic typewriter to do all or most of the work needed for that application.

The volume of motions practice handled by many law firms can justify the expenditure of time to work up the necessary language components to handle much of that work. Other offices may draw enough of a certain type of pleading to warrant planning and prepunching all, or almost all, the possible paragraphs. Wills and trust agreements may be other candidates for a programmed approach for other lawyers. Infants' compromises and other special applications may also be suitable areas.

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What is envisioned here is the selection of those fields of work in which a firm is busiest. An analysis of the paperwork requirements must then be made by an attorney who has an in-depth understanding of them. The language components, usually paragraphs, are accumulated, arranged, prepunched, and assigned numbers. The goal is to design a program to permit dictation by numbers of cards or tapes which are to be run into the automatic typewriter. Other numbers will designate the language to be added at preplanned stop points.

How successful a given application will be will depend in large part on how clearly the undertaking was analyzed and structured by the attorney who planned it. A particular program will be likely to work well if the analytical grouping of the paragraphs was made well. A logical grouping of the components will enable others to make the selections of paragraphs wanted in a step-by-step progression through the program.

A successful program is never written at one sitting. It evolves through use. As new paragraphs are needed, they are written, punched, and added. If the analytical job above described was done well, it should be clear just where new paragraphs fit into the overall scheme of things.

Nor does a successful application of a program require that the user draw entirely from prepunched material. On the contrary, the value of the approach is its tremendous flexibility in that an attorney can interject as much new matter as is required. To whatever extent prepunched material is appropriate, it is used. If lacking, conventional dictation is used. However, if newly dictated material appears to be of more than passing value, it should be reduced to punched form and added to the program for use in the future. Thus an ever-growing library of punched language components acts not only to facilitate future dictation but also to serve as a medium for the perpetuation of the experience of the office.

In many instances, certain combinations of components will be used together often. If the application is in pleadings, for example, a passenger in a two-car collision is a recurring situation. Common combinations can be run together into composite tapes to effectuate an even greater saving in dictation, typing, and proofreading time.

In the application here described, the automatic typewriter is the least important part. A well written program can clearly be

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of value even if the final typing is done manually. In fact, the paragraph components should be accumulated, grouped, and numbered over a period of time long in advance of any punching. Once such an approach shows itself to be workable, the automatic typewriter is the logical extension of it. The commitment of legal talent was made in the programming. The punching required to make the application mechanical is secondary. Although the investment of attorney's time is clearly greatest in programming an application as is here envisioned, the potential return is proportionate.

THE ROAD AHEAD

In coming years automatic typing will play an increasing role in many law offices. The advantages offered are too important to permit attorneys to overlook the equipment. High speed and error-free work may appear as the immediate benefits, and it is true that these factors alone may justify the cost. Soon after installation, other advantages will be noticed. The lawyer's proofreading time will be drastically reduced, limited to skimming rather than close reading. Some of the techniques which automatic typing encourages, particularly prepunching routinely used paragraphs, will lead to a reduction of the time needed by the attorney to dictate.

Other less obvious benefits will come to the attention of some firms. A certain flexibility of staff will result from the fact that automatic typing equipment can be operated by persons of limited typing ability. In addition, stenographic personnel who have had no legal training are acceptable employees because the format of the legal work is laid out by the equipment. The operator need have no idea what a court order should look like in order to produce one.

Yet the real value of automatic typing equipment goes further. It enables the typist to grow tremendously in stature and value. Her ability will stem from her familiarity with the equipment and materials which the office has available. Hands and mind are now capable of greater productivity than ever before possible. Surely, if office staff is to advance in parallel to factory personnel in rate of pay and other benefits, growth here

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too must be from the stoker of the furnace to the operator of the console.

Perhaps the greatest value automatic typing equipment will have will lie in what it will do to the attorney as well as for him: it will begin his training toward learning the disciplines of automation to prepare him for its future. Just what those disciplines are and what that future is, as the author sees both, will be set forth in the remainder of this article.

For an office to adjust to automation in its fullest sense, the firm must begin by arranging its work flow to separate the manual from the programmed. The need for manual typing will always be with us. No one expects to automate everything. Consequently, the work must be routed, express trains on express track, locals on the other. As each area of work becomes programmed the routing shifts accordingly.

Another task which the firm must undertake is the analysis and design of data components and printed forms so that the former fit the latter. The data of any case must be usable with every form. Gone are the days of phoning the stationer for a pack of someone or other's number 100. New forms must be designed by a staff member fully familiar with the data which the office holds in storage, who knows exactly how and where it will be placed onto the printed page.

In undertaking to program a particular area of work, such as a notice of motion or a pleading, the language components not only must be adequately chosen from a substantive standpoint, but also must be appropriately grouped so that a selection from group "A" can be followed by one from group "B" and so on down through the entire program. Each component must be given a reference number. Components must be adequately stored and easily retrieved. Automation works by putting parts together. Someone must design those parts to fit with one another. They must be given names or numbers so we can talk about them. They must be stored so they can be found when wanted.

The discipline must also be of self: to abandon old methods of dictation by talking work out; instead, to learn to transmit work by paragraph and stop number. Above all, to be willing to spend the necessary time to become familiar with a program which has been written by another attorney, if that is the case.

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The commensurate reward to the attorney is time saved, time to apply himself to hand crafting those paragraphs which require special thought and attention, drafting and redrafting, the immediate end product being a tape of those, ready to be integrated with prepunched materials to produce the final work product. Ideally, his new materials may be stored as a permanent part of the program, for his own or an associate's future use.

The following future developments in automatic typing and associated equipment are already in someone else's present. They exist, in the main, at the present time. All five of the applications previously described could be effected.

Important to all applications is increasing speed, machines which type ever faster, lines at a time, paragraphs at a time, even entire pages at once. Equipment using light on photosensitive paper has printed the bible in seventy seconds.

To supplement drafting, equipment is available which prints the typed word onto the punched tape, each letter adjacent to its code. Direct proofreading of the tape itself is thus possible. Using a pen which writes in magnetic ink, the operator will indicate on the tape where the reader is to stop; using another pen, to indicate where a skip operation is to terminate and normal reading to begin. "Justification" is available, a technique wherein the equipment senses the approach of the right margin and automatically spaces the remaining language to even it, then, automatically returns the carriage to the left, to continue the typing.

Information storage and retrieval equipment will be applied to case data. Names, addresses, captions and the like will be stored on rolls of magnetic tape and each will be searched for and retrieved in a fraction of a second. The storage unit will feed the needed information directly into the typewriter. Nor need the attorney buy the storage unit. He may simply rent the facility from his nearest computer and use his data telephone to dial for it. New information received? Store it by punching it into tape preceded by the search number you have assigned it; then, telephone your computer and feed the tape into your dataphone.

To process printed forms in quantity, automatic typewriters may be equipped with a sprocketed roller and programmed to respond to a "form feed" code. Accordion or fanfolded forms held to one another by a perforated attachment are drawn into the machine and to the correct line mechanically.

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The type into which a form or letter has been punched may be coded to cause auxiliary units to search for the data needed to complete it. If a certain letter needs to be sent to one's adversary, with carbon copy to the client in case 007, simply place the letter's tape into the automatic typewriter and set the auxiliary unit on 007. The tape signals the auxiliary unit when adversary's name and address are needed; auxiliary unit sends it back for the case. Likewise for client's information. All data relative to all cases may be encoded and stored. The tape in the typewriter is punched with the appropriate search code for the type of data needed, name of client, caption, index number, etc. The auxiliary unit is set for the particular case to which the present letter or form relates.

The tape may also be coded to cause the automatic operation of auxiliary output units, as distinguished from auxiliary input units. Letter tapes can be coded to cause a second typewriter to type the envelope while the first typewriter types the inside address. Accounting information can be picked up for later use by an auxiliary punch. Descriptive language which will be needed in some later step can be captured in punched tape automatically, as from the contract for use in the later deed, or from the notice of motion for use in the later court order. A descriptive list can automatically be punched and later typed of every letter sent, or, selectively, of certain letters sent, as part of a follow-up system.

Applications which have been fully programmed to the point where all or almost all the language components have been prepunched will benefit from stacking equipment; the prepunched cards can be stacked hundreds high and will be fed one by one through the automatic typewriter. A night's work can be so stacked in the evening and finished products mailed the next morning. Of course, any case data required will be automatically signalled out of the auxiliary storage unit. Material which has not been prepunched as part of the program will simply be punched for this particular need and stacked in at the appropriate points.

The mechanical approach of stacking cards can be replaced by an electrical one of copying them onto magnetic tape. Punched cards and tape can be copied onto magnetic tape at tremendously high rates of speed. Instead of stacking the cards it might be simpler to copy them in their entirety in this way. The cards could then be immediately replaced into storage. The end result

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would be a magnetic tape which could operate the automatic typewriter without human supervision until all the work on it was finished. The tape would then be erased for later use.

In summary, these observations: if automatic typing equipment is to be utilized at any level beyond the superficial, a systems approach to many aspects of practice is a necessary prerequisite. Materials must be analyzed, structured, indexed. The task is a substantial undertaking for an attorney. The approach will work only if he has the determination and perseverance to make it work. He must be motivated by a sense of the profound impact the program will ultimately have for his firm.

A second observation: the systems and programs developed by the law firm will be permanent value irrespective of what innovations are made in the hardware of automatic typing. Automation is an approach, not a machine.



"J. B., we've run out of unprocessed data!"